XLS-300

300 Watt Xenon Illuminator

Service Manual

CE

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LIT045CUDA
(English)

300 WATT XENON SERVICE MANUAL

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300 WATT XENON SERVICE MANUAL

INTRODUCTION

This manual has been prepared to aid in the repair and maintenance of the 300-Watt Xenon Illuminators.

The procedures and instructions contained in this document are to be used by qualified technical personnel only. Some procedures may have live exposed circuitry and wiring which could be hazardous if contacted with. Use extreme caution when working on equipment that has power applied to it.

TECHNICAL SUPPORT SERVICES

In the event that you experience difficulty or need technical assistance, please contact our technical support staff at (877) 677-2832 or by fax at (904) 733-4832.

Please have the following information ready when you call:

- MODEL NUMBER
- SERIAL NUMBER
- DETAILED DESCRIPTION OF THE PROBLEM

GENERAL THEORY OF OPERATION

The 300-Watt Xenon Illuminator general operation is as follows. Please consult Fig. 1 for wiring information.

A.C. POWER DISTRIBUTION

The 300 Watt Xenon Illuminators are based around a universal input power supply. Input line voltages of 100-120V ~ at 50/60 Hz and 220-240V ~ at 50 Hz are applied at the Power Input Model via a Hospital grade power cord. The input power is then filtered by a low leakage current EMI Filter. Over-current protection is provided by two 7.5 amp circuit breakers. A double-pole interlock switch provides operator safety, which is located on the back left side of the lamp heat shield.

DC POWER DISTRIBUTION

DC power for the other system components is generated by the lamp power supply. In addition to the 15 volts DC lamp power, it generates +12 VDC. The 12 VDC is used to power cooling fan and the elapsed lamp hour meter.

INTENSITY CONTROL

A rotating stainless steel disc that is placed in front of the lamp controls intensity. The disc contains holes in varying sizes and patterns. Manual lamp intensity control is made via a front panel mounted knob.

LAMP POWER AND IGNITION SYSTEM

The lamp used in the Xenon illuminators is a 300 watt ceramic arc lamp. For ignition of the lamp to occur, it takes a high voltage pulse of approximately 20 KV. The power supply generates a pulse of approximately 400-600 volts, which is then stepped up to the 20 KV pulse by the igniter module circuitry. Connection to the lamp is made via two jumbo banana jacks.

The lamp power and ignition system consists of the lamp power supply, lamp base assembly, and the lamp cartridge assembly. In the event you have a power supply failure, it is recommended that the power supply be returned to **Sunoptic Technologies**® for servicing. When power supply is switched on, the DC supplies come up to voltage immediately. The lamp power supply has a built in delay of 1 to 2 seconds before it will attempt to start the lamp. If the lamp is unsuccessful at igniting, the power supply will try 6 to 10 times in rapid succession before ceasing. After successful ignition, the supply switches to a 15 VDC output at approximately 20 amps of current.

COOLING SYSTEM

Cooling is provided by a 100 CFM, 12 VDC fan. Air is drawn through the sides of the unit, across the power supply and lamp, and exhausted through the rear mounted exhaust louver. An infrared filter which is located between the lamp lens and the lamp housing provides additional cooling of the light. This filter blocks the infra-red “heat” from the output turret while passing the visible light, thus lowering the temperature of the instruments and cables. Caution should still be used as there are still potentially hazardous temperatures at the turret.

PARTS REPLACEMENT PROCEDURES

The following procedures are meant to aid the technician/engineer in replacing defective or damaged components. These procedures are meant to be used by qualified personnel only. Extreme caution should be used and all necessary safety precautions taken when working on this equipment.

CIRCUIT BREAKER REPLACEMENT

1. Disconnect the illuminator from the power source.
2. Remove the 8 cover screws on the sides of the unit.
3. Open lamp access door and lift the top cover straight up and off the unit. Set aside.
4. Using an ohmmeter, verify which circuit breaker is defective.
5. Remove the defective circuit breaker and replace with the new one.
6. Replace the top cover making sure the lamp access door is over the lamp cartridge.
7. Replace the 8 cover screws and secure.

SHUTTER REPLACEMENT

1. Disconnect the illuminator from the power source.
2. Remove the 8 cover screws in the sides of the unit.
3. Open lamp access door and lift the top cover straight up and off the unit. Set aside.
4. Remove the 3 screws on the bottom of the unit with hold the front panel to the bottom housing. Remove the 2 screws on the side of the front panel.
5. Remove the screw holding the shutter to the front panel.
6. Pull of the shutter assembly.
7. Replace the shutter assembly with the new one.
8. With the control turned fully clockwise, align the shutter in such a way that it does not cover the hole in the front panel. Replace the screw and tighten the screw until it holds the shutter in place and still allows for free movement of the shutter**. Do not over tighten the screw.**
9. Replace the front panel and secure to the bottom housing with the 5 screws.
10. Replace the top cover making sure the lamp access door is over the lamp cartridge.
11. Replace the 8 cover screws and secure.

I.R. FILTER ASSEMBLY REPLACEMENT

CAUTION: Before performing this procedure, be sure the unit has cooled to room temperature. The lamp cartridge and IR filters operate at very high temperatures.

1. Disconnect the illuminator from the power source.
2. Open the lamp access door and remove the lamp, gently rocking from front to back. Set lamp aside.
3. Place unit on its right side. Reach in the lamp access door and hold onto the IR filter assembly while removing the 2 mounting screws from the bottom.
4. Remove the assembly through the lamp access door.
5. Replace the new assembly into the unit through the lamp access door. Note that the IR filter is facing toward the back of the unit.
6. Secure with the 2 mounting screws from the bottom.
7. Place the unit back on its feet. Install the lamp, being sure it has totally seated, and close the access door.

LAMP BASE REPLACEMENT

CAUTION: Before performing this procedure, be sure the unit has cooled to room temperature.

1. Disconnect the illuminator from the power source.
2. Remove the 8 cover screws in the sides of the unit.
3. Open lamp access door and lift the top straight up and off the unit. Set aside.
4. Remove the lamp cartridge assembly, gently rocking from front to back. Set lamp cartridge aside.
5. Disconnect the power supply lamp wires from the lamp base igniter module at the + and – terminals on the igniter circuit board.
6. Place the unit on its side.
7. From the bottom, remove the 4 screws that hold the lamp base to the bottom panel.
8. Remove the lamp base from the unit. Place the new lamp base igniter assembly into the unit with the banana jacks in the heat shield area. Secure with the 4 screws to the bottom of the unit.
9. Place the unit back on its feet.
10. Reconnect the lamp power supply wires to the igniter module terminals.
11. Install the lamp cartridge, being sure it is totally seated.
12. Replace the top cover making sure the lamp access door is over the lamp cartridge.
13. Replace the 8 cover screws and secure.

POWER SUPPLY REPLACEMENT

1. Disconnect the illuminator from the power source.
2. Remove the 8 cover screws in the sides of the unit.
3. Open lamp access door and lift the top cover straight up and off the unit. Set aside.
4. Disconnect the fan lead connector, the AC power input connectors, and the lamp output power wires from the power supply.
5. Set the unit on its side.
6. While holding the power supply with one hand, remove the 4 mounting screws from the bottom of the unit.
7. Place the new power supply in the unit so all 4 holes line up with the power supply standoffs. Secure with the 4 mounting screws from the bottom.
8. Place the unit back on its feet.
9. Reconnect the fan lead connector, the AC power input connectors, and the lamp output power wires to the power supply.
10. Replace the top cover making sure the lamp access door is over the lamp cartridge.
11. Replace the 8 cover screws and secure.

COOLING FAN REPLACEMENT

1. Disconnect the illuminator from the power source.
2. Remove the 8 cover screws in the sides of the unit.
3. Open lamp access door and lift the top cover straight up and off the unit. Set aside.
4. Disconnect the fan lead connector and the hour meter wiring harness connector from the power supply.
5. Remove the 3 screws holding the back panel to the bottom housing and lay down the panel.
6. Remove the fan mounting screws and nuts. This will free the fan louver also.
7. Replace the fan assembly with the airflow blowing out the back of the unit. The fan leads should be coming out of the fan at the tip and against the back panel.
8. Secure the fan mounting screws with the nuts.
9. Slide the back panel into the mounting slots.
10. Reconnect the fan lead connector and the hour meter wiring harness connector to the power supply.
11. Replace the top cover making sure the lamp access door is over the lamp cartridge.
12. Replace the 8 cover screws and secure.

LAMP REBUILD PROCEDURE

See Fig. 2 and Fig. 3 (PFC units) for reference.

When rebuilding the Xenon lamp cartridge, it is recommended to replace several key components of the cartridge assembly. These components are included when you purchase a replacement rebuild kit from **Sunoptic Technologies®**.

CAUTION: Before performing this procedure, be sure the unit has cooled to room temperature.

WARNING: Lamps are under high pressure and must be handled with care. A face shield should be worn when handling this lamp.

The following procedure will guide you through rebuilding your Xenon lamp cartridge.

Tool required: #2 Philips screwdriver, 7/64" Allen wrench, Needle nose pliers and ½ " nut driver.

1. Be sure lamp has cooled to room temperature.
2. Remove the 2 jumbo banana plugs from the bottom of the unit. Press the lamp assemblies from the back, out of the lamp housing.
3. Set the lamp face down on its front heatsink.
4. Remove the 3 Phillips screws and lockwashers from the back heatsink.
5. Gently pull the lamp out of the back heatsink.
6. Remove the Allen head screw in the side of the front heatsink.
7. Gently pull the lamp out of the front heatsink.
8. With the needle nose pliers, remove the cooling ring and from the inside of each lamp heatsink the metal spring gaskets.
9. Clean off all the parts with a rag or paper towel, alcohol may help in heatsink compound removal.
10. Remove the new lamp from its package. Record its serial number and date installed in the illuminator manual.
11. Set the lamp face down with its protective cap on its lens. If the lamp has a rubber cap on the fill tube on the rear of the lamp, remove it.
12. Apply a thin film of heatsink compound to the back of surface of the lamp, and the inside contact area of the front and back heat sinks.

CAUTION: Only apply a thin layer of heatsink compound to areas.

13. Install the new metal spring gasket into the front groove of the back heatsink. Place the fingers so they are toward the back.
14. Press the lamp into the back heatsink making sure the fill tube is aligned with the fill tube relief hold.

LAMP REBUILD PROCEDURE (continued)

15. Secure with 3 lockwashers and 6-32 Phillips head screws.
16. Apply a thin film of heatsink compound to the inside contact area of the front heat sink.
17. Install the new metal spring gasket into the back groove of the front heatsink. Place the fingers so they are toward the front.
18. Remove the end cap from the front of the lamp. Use care not to touch the window of the lamp.
19. Apply heatsink compound to the front outside diameter of the lamp. Be careful not to get compound on the lamp glass surface. If you do, clean the lamp with a clean alcohol wipe.
20. Press the cooling ring onto the front of the lamp.
21. Press the front heatsink assembly onto the lamp/cooling ring assembly. Align the threaded holds in the bottom of the 2 heatsinks with each other.
22. Secure the front heatsink onto the lamp with the lockwasher and Allen head screw.
23. Align the threaded holes in the bottom of the heatsink with the bottom of the lamp housing, and press the entire lamp assembly into the lamp housing, so that when the lamp is pointing toward you, the housing handle is on the top. Install the 2 banana plugs into the bottom of the lamp assembly and tighten.

PFC LAMP REBUILD PROCEDURE FIG. 3

The following procedure will guide you through rebuilding your PFC Xenon lamp cartridge.

Tools required: Screw driver and Adjustable wrench.

1. Ensure lamp has cooled to room temperature.
2. Remove the brass plugs from the bottom of the unit. Press the lamp assemblies from the back, out of the lamp housing.
3. Set the lamp face down on the front heatsink.
4. Remove the copper clips from both heatsinks.
5. Gently pull the lamp out of the heatsinks.
6. Remove the cooling ring from the lamp.
7. Clean off all the parts with a rag or paper towel, alcohol may help in heatsink compound removal.
8. Remove the new lamp from the package. Record the serial number and date installed in the illuminator manual.
9. Set the lamp face down with the protective cap on the lens. If the lamp has a rubber cap on the tube on the rear of the lamp, remove it.

10. Apply a thin film of heatsink compound to the metal surface of the lamp and the inside contact area of the front and back heatsinks. Be careful not to get compound on the lamp glass surface. If you do, clean the lamp with a clean alcohol wipe.

CAUTION: Only apply a thin layer of heatsink compound to areas.

11. Press the lamp into the back heatsink making sure the fill tube is aligned at six O'CLOCK.
12. Install copper clips.
13. Remove the end cap from the front of the lamp. Use care not to touch the window of the lamp.
14. Apply heatsink compound to the front outside diameter of the lamp.
15. Press the cooling ring onto the front of the lamp.
16. Press the front heatsink assembly onto the lamp/cooling ring assembly.
17. Secure the front heatsink onto the lamp with the copper clips.
18. Align the threaded holes in the bottom of the heatsink with the bottom of the lamp housing, and press the entire lamp assembly into the lamp housing, so that when the lamp is pointing toward you, the window of the lamp is pointing to the front panel. Install the two brass plugs into the bottom of the lamp assembly and tighten.

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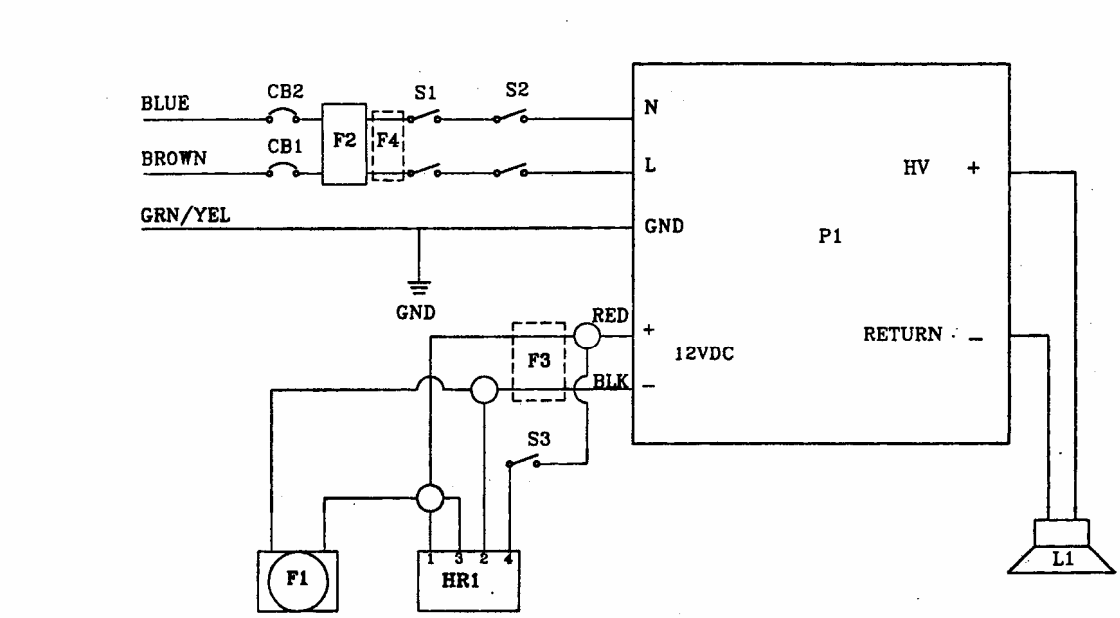
REPLACEMENT PARTS

DESCRIPTION	PART NUMBER
Replacement Lamp Cartridge	800-008
EMI Filter	800-009
300-Watt Xenon Power Supply	800-010
Hour meter	800-011
Circuit Breaker	800-012
IR Filter Assembly	800-005
Power Input Module	800-002
Shutter Assembly	800-003
Lamp Base Assembly	800-006
Cooling Fan	800-013
Reset Switch Assembly	800-004
Xenon Lamp Rebuild Kit	800-007

For parts not listed here, call our Technical Service Department listed at the front of the manual.

FIGURE 1



CODE	INV#	DESCRIPTION	QTY
CB1/CB2	I3000044	7.5 AMP CIRCUIT BREAKER	2
SI	I1226000	LIMIT SWT	1
S2	I1245500	ON/OFF SWT	1
P1	I3000006	300 watt PWR SUP	1
F1	I2000014	12VDC FAN	1
HR1	I2000012	12VDC HR METER	1
L1	I3000007	XENON 300W LAMP	1
F2	I1180006	CORCOM 6EH1 FILTER	1
F3/F4	I1180008	INTERNAL FERRITE	2
S3	I2000037	HOUR METER RESET SWITCH	1

FIGURE 2

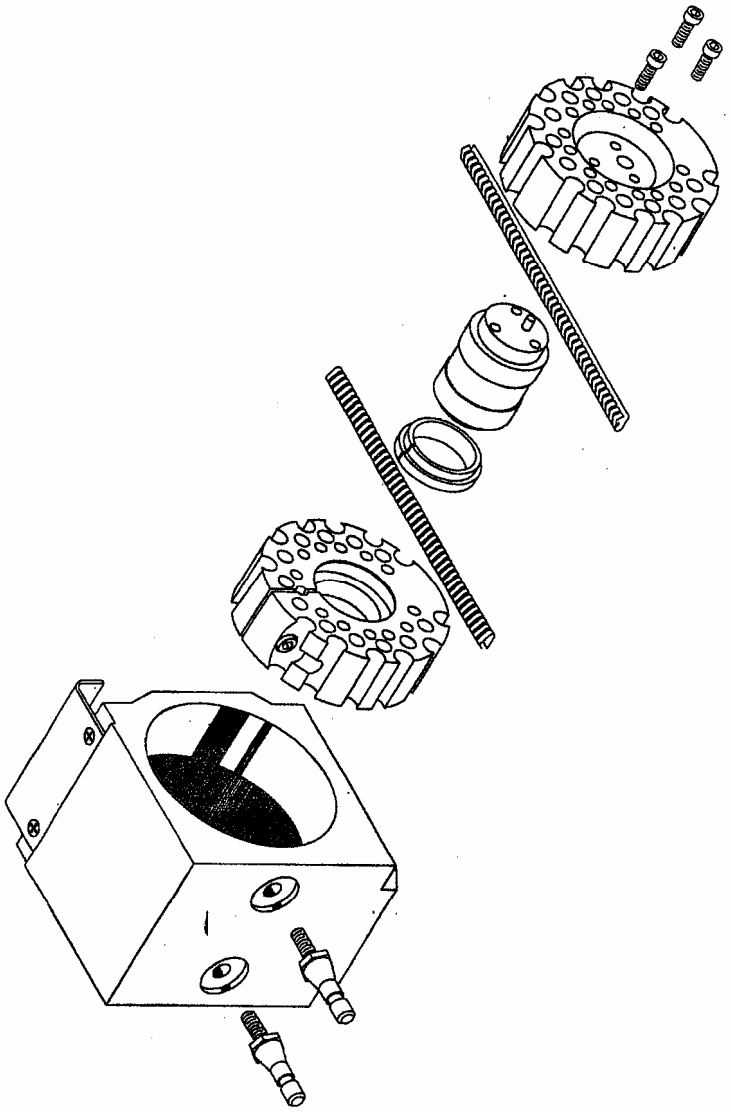
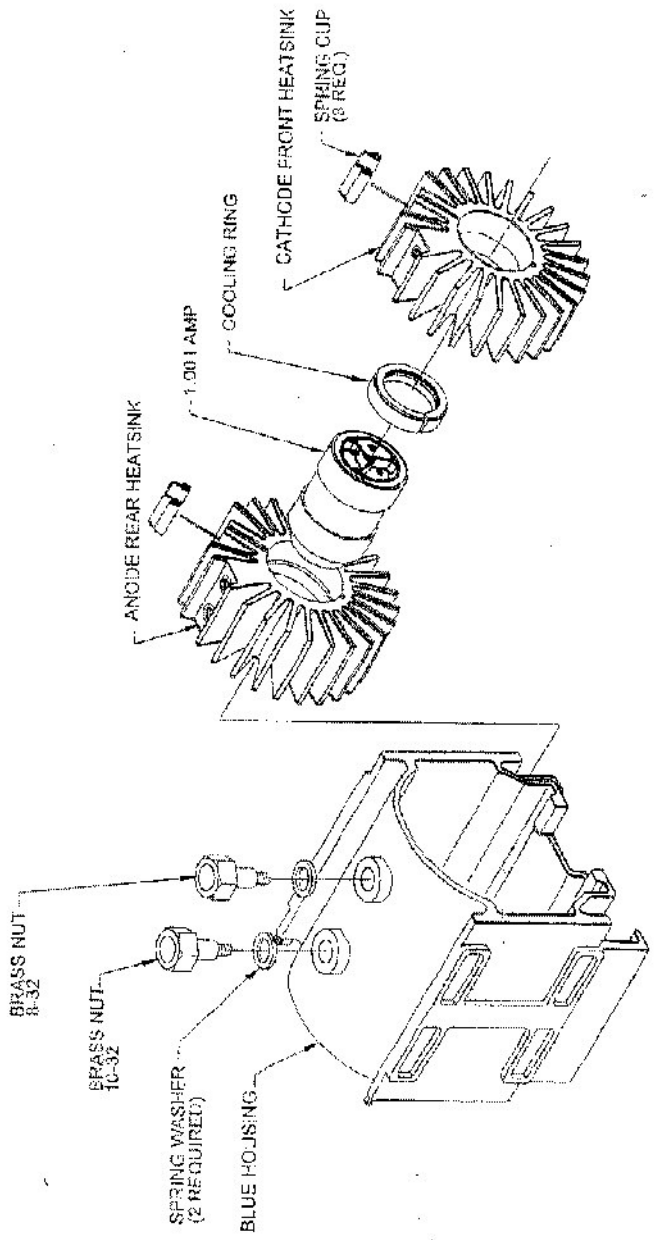


FIGURE 3


SPRING CUP
(3 REQ.)
CATHODE FRONT HEATSINK
COOLING RING
1.001 AMP
ANODE REAR HEATSINK
BRASS NUT
8-32
BRASS NUT
10-32
SPRING WASHER
(2 REQUIRED)
BLUE HOUSING